

Tuning of the PID Controller to the System with Maximum Stability Degree using Genetic Algorithm

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Abstract:

In this paper is proposed a tuning algorithm of PID controller that offers the maximum stability degree of the control system, based on the genetic algorithm. The tuning algorithm was designed based on the maximum stability degree method with iterations, where the tuning parameters depend on maximum stability degree which is varied. Based on its values, it was proposed to implement genetic algorithm to find the tuning parameters. The maximum stability degree method permits to obtain the high stability and high performance of the system, but this method has some limitations in case when control object is described by the model of object with inertia low order. In this case to find the best tuning parameters was proposed to use the genetic algorithm. For efficacy analysis of the proposed algorithm, there are presented some case studies and practical applications.

